Policy Implications of Environmental Management Systems

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Paper prepared for the Research Summit on Environmental Management Systems sponsored by the U.S. Environmental Protection Agency, the Multi-State Working Group on Environmental Management Systems, and the Brookings Institution, November 2-3, 1999, Washington, D.C.

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There is growing interest in using environmental management systems to stimulate environmental improvements beyond those brought about by the current environmental protection system. The current system in the United States is one governed by statutes that address media-specific environmental problems and which are administered by state and federal agencies also organized mainly by specific media. Although this system is changing, it still relies heavily on technology-based standards and on the permitting of individual facilities by state agencies operating under approved plans. Government agencies have traditionally used inspections and enforcement actions to ensure compliance, and citizen and environmental groups have also been able to bring their own lawsuits to compel compliance.

While the existing system of environmental protection has ensured that firms now devote large amounts of resources to pollution control that have led to substantial improvements in environmental quality, many have suggested that the current system has reached its limits. It is argued that current statutes and regulations impose duplicative requirements on firms and limit their flexibility to achieve greater environmental gains at lower costs. This system also purportedly limits the incentives for firms to seek out innovative approaches to environmental control, rely more on source reduction, and move beyond compliance with environmental laws. A number of environmental problems remain both unregulated and probably unregulatable, at least in the current political climate. Further progress toward a cleaner environment at a lower cost may therefore require new ideas about achieving environmental policy goals.

The environmental management system (EMS) is one such "new idea." Under an EMS, a firm sets organizational goals with respect to the firm's environmental impacts and establishes the planning, staffing, and operational procedures needed to achieve those goals. Within the framework of an EMS, an organization will develop internal policies concerning its environmental impacts, such as resource use, disposal techniques, and pollution prevention. These systems can be audited by qualified third parties to assess the performance of the management system. Firms can also seek certification that their systems meet the criteria set forth in ISO 14001, an international standard for the operation of environmental management systems.

Environmental management systems may help overcome limitations in the current system of environmental regulation by providing a rigorous process for organizations to search for new ways to minimize their environmental impact at lower costs. By acting systematically, firms can identify more precisely their current resource uses and seek alternative processes that use fewer or more benign resources, even if doing so is not required by law. Systems that meet the ISO 14001 standard must seek continual improvement, holding forth the prospect that firms may go beyond compliance with existing regulations.[1]

This paper examines three key policy questions raised by environmental management systems. First, do these systems yield better results in terms of achieving environmental goals? Second, assuming that they do lead to better results, what policies would best encourage widespread adoption of environmental management systems? Finally, how should environmental policy adapt (if at all) in the face of widespread implementation of environmental management systems?

In the first part of this paper, I discuss how we can assess the impact of environmental management systems. If these systems yield better results, then it will be appropriate for government to seek ways of encouraging their widespread use. On the other hand, the success attributed to environmental management systems may depend ultimately on attributes of firms which are independent of the management system *per se* -- attributes such as management commitment to environmental improvement. In that case, policy would need to foster management commitment instead of just the formal adoption of environmental management systems. Further research will be needed to identify the precise contribution of environmental management systems versus other organizational factors. The findings of such research will hold important public policy implications, for policies which increase the use of environmental management systems may do little to encourage the sustained commitment needed for firms to make ongoing environmental improvements.

In the second part of this paper, I examine a variety of public policies that can be crafted to encourage firms to adopt environmental management systems and make significant improvements in environmental performance. These options include those that would reduce firms' costs of implementing environmental management systems, increase firms' benefits from their implementation, and outright require the adoption of environmental management systems. I argue that each policy option should be assessed according to a range of criteria, including the likely impact it will have on firms' incentives to achieve environmental improvements, its administrative feasibility, and its legal and political acceptability. Public policy also should take into account how the impact of each option may vary with respect to different types of firms or different sectors of industry. Research investigating the effectiveness of these policies will need to be carefully constructed to take these differences into account.

In the third and final part of this paper, I consider very briefly how the future of environmental policy in the United States could be affected by the widespread adoption of environmental management systems. I suggest that if firms widely incorporated environmental management systems as a normal part of corporate management, government agencies might well be able to entertain more performance-based environmental regulation, new methods of tracking environmental information, and more strategic approaches to regulatory enforcement. In addition, if environmental management systems foster technological or process innovations, these new ideas could be incorporated into policy, leading to more effective regulations of a more conventional variety.

I. Will Environmental Management Systems Yield Better Results?

The first policy question to ask is whether environmental management systems lead to better outcomes. In this part of the paper, I discuss how researchers and policy analysts can better assess the impact of environmental management systems on environmental goals. I argue that to determine whether environmental management systems make a difference we must untangle the effects of these systems from other organizational factors that may also contribute positively to the achievement of environmental goals.

What it means to "contribute positively" can be approached in at least three ways. First, it can simply mean the impact of these systems on some socially desirable goal, such as whether they lead firms to lessen their environmental impacts or prevent pollution. Second, the contribution of environmental management systems can be understood in terms of valuation or, more precisely, the costs and benefits of environmental management systems. In other words, do the positive impacts of these systems outweigh their costs? Finally, both the "impact" and "valuation" approaches can be pursued in comparative terms, that is, by comparing environmental management systems with the status quo and with other alternative methods of achieving environmental improvements. A comparative analysis would ask whether environmental management systems result in more or less impact (or greater or fewer net benefits) than their alternatives.

It should be apparent that all three ways of analyzing the results of environmental management systems hinge at least initially on showing that these systems have an impact, either in terms of leading to better environmental results or the same results at lower cost. Before constructing extensive policies that encourage or rely upon environmental management systems, it would seem advisable first to know whether these systems work. This is why research on the impacts of environmental management systems will be relevant to the future direction of public policy. Toward this end, state and federal agencies have initiated a substantial number of pilot projects to understand better how firms can use environmental management systems. These pilot projects will reveal various ways that firms implement environmental management systems and show results that are associated with the use of environmental management systems at participating firms. Findings from pilot studies of volunteer firms, however, will be inherently limited in what they can tell us about how environmental management systems will work for the larger population of firms which do not volunteer to cooperate with government agencies in pilot studies.

Just as will be important to understand *whether* environmental management systems lead to environmental improvements, it will be important to understand *why* they do (assuming that these systems are indeed correlated with positive gains). The distinction between discovering the impact of EMS and explaining that impact will become especially relevant when it comes to designing public policy. The explanation for the outcomes associated with EMS use either may have something to do with the environmental management system itself or it may have something to do with the firm. Which of these it is will matter, we shall see, when it comes to crafting public policy because some policies which would increase the use of EMSs may fail to address the more important factors underlying firms' environmental performance.

Plausibly, the explanation for any improvements associated with environmental management systems may come from the system itself. By this I mean that the mere presence of a structured internal management system on the environment is what leads to environmental improvements. This can come about through either a "draw in" or a "lock in" effect. The existence of a system may tend to "draw in" individuals within a firm, signaling to them that they ought to give a higher priority to reducing the firm's environmental impacts. The presence of the system may itself motivate employees to look for innovative ways of improving environmental performance or lowering costs. These systems may also provide an institutional mechanism by which a firm's top management can entrench their commitment to environmental goals (independent of how strong or weak these goals may be). The system, in this sense, would "lock in" the firm to achieving environmental gains. This "lock-in" might be further enhanced through a rigorous system of verification or auditing by qualified third parties. By providing an institutional structure for the achievement of environmental objectives, management systems may also minimize slippage from these goals over time.

Equally plausibly, the effectiveness of an environmental management system may depend on something other than the system itself. We can say with certainty, of course, that something other than the management system itself leads firms to adopt an environmental management system. Once we recognize that factors other than the EMS lead firms to adopt environmental management systems in the first place, we can also see that these same kinds of outside factors can be working more directly to affect firms' overall environmental performance. Firms may place a priority on environmental improvement for a number of reasons.[2] Some organizations may focus on their environmental performance in order to maintain compliance and stay ahead of increasingly stringent regulatory standards. Others may seek cost-savings from more efficient use of resources. Others may seek to garner a reputation as an environmental leader. Others may already be leaders in other areas of innovation which have the effect of improving environmental performance.[3] Some organizations may simply think that improved environmental performance is good for society. Still others may seek environmental excellence in the hope of gaining some consumer advantage. These kinds of "outside" factors -- i.e., factors that are independent of the environmental management system -- are ones that can lead organizational actors to pursue improvements in their organization's environmental performance.

It is also possible that both kinds of explanations have merit. It may be that both the presence of the management system itself as well as factors outside the management system are what lead firms to make environmental improvements.[4] The EMS may be the vehicle that firms with a high commitment to environmental performance use to make improvements. Even still, factors such as top management's priority on environmental performance may ultimately be more vital in determining a firm's performance than the existence of an environmental management system. Even with an environmental management system, firms will probably perform better if their managers possess the determination to implement their EMSs rigorously and to make investments needed to change production processes or otherwise improve environmental performance. The motivation of top management -- not the presence of an EMS -- could well be what best explains firms' environmental performance.

More research is needed to untangle effects caused by the EMS from effects caused by factors other than the EMS. We do know that there is considerable variation in firms' environmental performance. It would be helpful to know what explains this variation. Does environmental performance vary systematically depending on the type of environmental management system adopted by a firm (such as ISO 14001 or EMAS or perhaps Responsible Care)? If it did, this would tend to suggest (assuming other factors could be controlled) that the environmental management system *as a system* is more important in explaining environmental improvements. It would also be informative to see whether other factors account for variation in environmental performance, factors which might include a firm's overall orientation to the environment as well as perhaps its consumer base or overall size.

Table 1 displays a matrix illustrating different relationships between the two main types of factors. In this table, I use the phrase "management commitment" to refer to the overall priority that a firm's top management gives to environmental improvement. As such, "management commitment" serves as a proxy for those factors contributing to environmental improvements which are independent of the management system. Firms that fall into Cell I will presumably make environmental improvements, while those in Cell IV presumably will not. However, with data solely from firms in these two categories, it would not be possible to sort out whether it is the EMS (or lack thereof) or the firm's commitment (or lack thereof) that explains the outcome.[5] However, if we can collect data on firms in Cells II and III we could begin to identify whether it is the EMS or the management commitment that best explains the firm's environmental improvements. If firms with high commitment but no EMSs (Cell III) still make environmental progress, then we can infer that the EMS is not the important explanatory variable. (Of course, a problem with Cell III is that it is hard to imagine any firm which has a high environmental commitment which does not also have *some kind* of management system, even though it might not be a system that the firm would call an EMS.) On the other hand, if firms with low environmental commitment adopt EMSs (Cell II) and tend to make environmental improvements, then we can infer that environmental

<u>Table 1: A Typology of Firms Based on Factors Affecting Environmental Performance</u>

		Management Commitment	
		High	Low
Presence of an EMS	Yes	Cell I	Cell II
	No	Cell III	Cell IV

management systems matter more. However, if Cell II firms do not make, on average, as much improvement as firms in Cell I, then we can infer that commitment matters most.

Why do these distinctions matter? They hold at least three implications for public policy. First, there is the possibility that Cell II firms could turn out to be firms that adopt and use environmental management systems only in a token or ritualistic manner, doing the bare minimum needed to be considered a firm that employs an EMS without making any significant environmental improvements.[6] The higher the percentage of such firms in Cell II, the less important it would be to design public policy toward increasing the number of firms adopting environmental management systems *per se*. The number of firms which have adopted environmental management systems would turn out, in other words, to be a weak predictor of firms' environmental progress.[7] Second, the likelihood that different firms will implement environmental management systems with different degrees of effectiveness means that policy makers may need to make any incentives contingent on demonstrable environmental progress and not on the mere fact that a firm has an EMS in place.[8] Regulators may need to expect that firms will use specific tools for measuring, monitoring, and verifying actual environmental performance and perhaps even meet substantive targets for environmental improvement before they qualify for any offered incentives. Finally, the more that factors independent of management systems themselves explain environmental performance, policy makers will need to focus on these independent factors. It is likely that some policies which could dramatically increase the use of certain environmental management systems would actually weaken other factors such as the motivation of management to seek environmental improvement. Policies that mandate the use of environmental management systems, for example, may lead to a formal increase in the number of firms with such systems, but the process of compulsion may nevertheless fail to promote (and may even hurt) earnest efforts by firms to look for ways to go beyond compliance with existing regulations.[9]

This part of the paper has raised issues that future research will need to consider in determining precisely whether environmental management systems -- as opposed to other organizational factors -- yield better environmental results. To encourage companies to use environmental management systems, it will be necessary to understand why organizations commit themselves to the challenges of making significant environmental improvements. If the impact from environmental management systems comes from the earnestness and rigor with which they are implemented -- that is, from the firm's "heart and soul"[10] rather than the simple adoption of formal procedures -- then public policy will need to create incentives for firms not only to adopt EMSs but to adopt them with the commitment that is required to make them an effective vehicle for environmental improvement.

II. How Can Public Policy Promote Environmental Management Systems?

I have argued that we need to study the impact of environmental management systems not only to decide whether these systems are worth promoting, but also to understand why they work. Public policy may need to encourage the kind of sustained *commitment* and *diligence* that makes environmental management systems effective instead of just encouraging firms to create minimally "certifiable" systems. For those firms that are already in the vanguard on the environment, perhaps little in the way of public policy will be needed to encourage these firms to exploit the potential of environmental management systems. This is because they are already beginning to do so on their own. The bigger challenge will be to encourage the earnest implementation of environmental management systems by those firms that have yet to see the potential benefits of EMSs for their business as well as for the environment.

This part of the paper examines nine policy options to encourage more widespread adoption of environmental management systems. For convenience sake, I have grouped these options into three categories: (1) policies that lower the costs of implementing environmental management systems; (2) policies that increase the private benefits of these systems; and (3) policies -- both public and private -- that would explicitly require the implementation of environmental management systems. For each policy in these categories, I consider the degree to which it might provide an incentive for a firm to implement an effective environmental management system. The incentive value of each policy is only one of several criteria to use in evaluating these policies. Others include the policy's scope (i.e., whether it would encourage many firms or only a few), its legal and political acceptability, and its administrative feasibility. At the present time, there is not enough experience with, nor research on, all of these policy options to support strong conclusions about how well they meet these several criteria. However, after describing each policy option and its incentive potential in the pages to follow, I briefly present a series of hypotheses for each option which can be used to guide future research.

A. Policy Options to Lower Private Costs of EMSs

In implementing an environmental management system, a firm can incur a variety of costs. It confronts the information costs associated with learning about environmental management systems and how they can be effectively implemented. It faces the costs associated with modifying facilities, processes, staff, and equipment. It also may need to overcome the costs that may arise should regulators rely on the documents the firm generates through its environmental management system to sanction the firm for legal violations. This section addresses several policy options designed to mitigate the costs of environmental management systems.

1. General Education. Information represents an initial cost that firms face with respect to environmental management systems.[11] A firm's managers need to know what an environmental management system is and how implementing one might benefit the firm as well as the environment. Government agencies can take steps to provide general information about these systems and demonstrate overall support for their adoption. Examples of such steps include promoting academic research on the benefits of environmental management systems as well as the general dissemination of information in trade and environmental management publications, conferences, the internet, and other venues for communicating ways that environmental management systems can lower costs and improve the environment.

Educational efforts of this nature are feasible for government agencies since they require limited commitments of staff and no changes in existing regulations. Over the long term, such efforts can perhaps foster a cultural change within the regulatory community that will be conducive to the adoption of environmental management systems. Firms may be more likely to adopt environmental management systems if their competitors, environmental groups, and other organizations support their use. Efforts that can demonstrate the benefits of environmental management systems to a wide range of actors would seem only to help facilitate their use.

In the shorter term, however, a general educational approach may have only a limited impact on firms' behavior. For those large firms which already have extensive environmental departments, the value added of this approach will be at best minimal since many of these firms are already investigating the potential of an environmental management system. For many other firms, it simply may not be enough just to know that a systematic effort to improve environmental performance might be good for their business as well as the environment. They will probably also need to know that the benefits to their firm will outweigh the costs associated with developing an environmental management system, and they may need other incentives to convince them that this will be so.

2. Technical Assistance. Many firms will need specific information about how to develop environmental management systems for their own operations. Environmental agencies can offset these costs by providing concrete advice -- technical assistance -- to firms seeking to establish environmental management systems. Compared with a general education approach, technical assistance provides a greater incentive as it offsets more of a firm's information costs. In doing so, of course, it shifts these costs to government agencies. Now, it may be the case that government agencies can provide technical assistance at a lower cost than the firms, especially on compliance issues, but such assistance still comes at a cost. Meaningful technical assistance cannot be provided to all firms who might benefit from it, so agencies must be strategic in how they deploy this approach. Accordingly, the EPA has targeted EMS technical assistance and training in particular sectors, such as recently in local government, metal finishing, and biosolids. Assistance to specific firms can be leveraged by using the experience with these firms to develop sector-specific EMS "templates" that others can use to adopt EMSs even without directly participating in the technical assistance program.

Technical assistance may be limited by firms' reluctance to invite government personnel into their facilities. To be meaningful, technical assistance may require that government officials visit plants and acquire detailed information about a firm's environmental impacts. Some firms may fear that government employees rendering technical assistance will discover legal violations that would otherwise go undiscovered.[12] It is unclear how prevalent or strong this "fear factor" is, but it may lead agencies to want to offer some limited enforcement forbearance in conjunction with technical assistance. It may also help if agencies provide technical assistance in partnership with sector-based trade associations, a step that could both ameliorate some fear on the part of individual firms as well as leverage the technical resources of government agencies.

3. Subsidies or Tax Credits. Subsidies or tax credits could in principle be offered to induce firms to establish EMSs, directly compensating them for the cost of implementing environmental management systems.[13] If subsidies or tax credits are sufficiently high, they can provide a very powerful incentive for firms. However, subsidies can also be too low. For example, even though the Minnesota Pollution Control Agency offered to subsidize one half of the costs of compliance audits for printers in the state, after four years only 15 companies (or less than 1% of the printers in the state) had asked for the subsidy.[14] While the US EPA and some state agencies have adequate resources to offer limited grants to firms in selected sectors for the purposes of offsetting the costs of certain projects, any substantial subsidization for a large number of firms would exceed the resources of government agencies.

Tax credits would have the advantage of not requiring additional appropriations. They also have the advantage of being broadly applicable, potentially encouraging firms throughout all sectors to adopt environmental management systems. Nevertheless, proposals to provide substantial tax credits would probably not find much political support. Even if legislative support could be secured, the relationship between revenue agencies and environmental regulators would need to be sorted out. Neither tax credits nor subsidies appear to be viable options for encouraging the widespread adoption of environmental management systems.

4. Audit Protection. In the course of implementing environmental management systems, firms conduct assessments of their current environmental practices and subject themselves to internal and third party audits. Firms have an incentive to adopt such systems in order to minimize the risks of noncompliance and to achieve any cost savings that may arise from a more efficient management of materials and energy. However, firms also face a disincentive for conducting internal audits of environmental impacts. If the documents produced during these audits show that firms have failed to comply with prevailing regulatory requirements, these

documents constitute admissions of violations and may be used by the government or environmental groups to prosecute enforcement actions or citizen suits against the firms. The risk that audit documents might later be used against the firm could be considered an additional "cost" of implementing an environmental management system and may discourage some firms from launching such systems.

In an effort to counteract disincentives associated with the potential release of audit documents, a number of states have adopted self-audit privilege legislation which provide varying degrees of protection to internally created environmental management documents.[15] For example, in the state of Oregon, any environmental audit report is treated as privileged and generally inadmissible in any legal action.[16] The privilege does not apply, however, if the firm failed to act promptly to initiate reasonable efforts to rectify violations documented in its audits. The U.S. EPA has issued its own audit policy which also aims to remove barriers that could keep firms from conducting compliance assessments.[17] The EPA audit policy does not create a privilege for audit documents, but it does articulate the agency's general (though non-binding) position that it will refrain from making routine requests for internal audit reports.

It is not clear precisely what impact self-audit policies have in terms of encouraging firms to develop environmental management systems. Intuitively such policies would seem to remove a potential "cost" associated with conducting self-audits by offering assurance that regulators will not use audit documents against firms. However, firms may already have sufficient incentive to conduct audits notwithstanding any potential risk that regulators will use audit documents against firms. In a recent evaluation of its audit policy, EPA acknowledged several studies which reportedly show that the overwhelming incentive for firms to implement voluntary audits is to correct noncompliance problems before government inspectors discover them.[18]

Moreover, it is less clear what effect audit policies will have on the development of broader environmental management systems. In its evaluation, EPA cited some evidence suggesting that its audit policy encouraged firms to implement environmental management systems. Out of 50 firms surveyed who had reported violations under the EPA's audit policy, about half reported that they had in place either an EMS or a due diligence compliance management system. Of these, half reported that the EPA's audit policy had "encouraged specific improvements" in these systems.[19] A central question remains with respect to how many firms would develop such systems in the absence of policies that protect the confidentiality of internal audit reports. Such policies do appear to mitigate a disincentive for creating management systems which include compliance audits, but they may ultimately provide only a moderate impetus for firms to develop environmental management systems in the first place.

B. Policy Options to Increase Private Benefits of EMSs

Just as lowering the costs of environmental management systems could help promote their use, so too could efforts to increase the benefits that accrue to firms which adopt these systems. Government agencies could potentially offer firms preferential treatment in the form of public recognition, enforcement forbearance, and regulatory and permitting flexibility.

1. Public Recognition. Initiatives designed to promote voluntary environmental efforts have frequently offered public recognition to firms. EPA's 33/50 and Energy Star programs, to name two examples, have offered firms various types of recognition. Public recognition can range from certificates of participation, product labeling, and even government-sponsored publicity. Recognition gives firms a distinction which they can use to differentiate their products and demonstrate to employees and local communities that they practice exemplary environmental stewardship.

By itself, public recognition will not provide a major incentive for most firms to adopt environmental management systems, except perhaps in a few industries where product differentiation on environmental grounds adds significantly to a firm's competitive posture. As a result, few programs have offered only public recognition. The US EPA's 33/50 program was an exception in offering only public recognition, but then participation in this program was also quite exceptional in that it demanded little from firms other than submitting a pledge to try to reduce emissions of specified chemicals. When EPA tried to establish a second phase of the 33/50 program, industry reportedly balked because the proposed second phase would have imposed greater demands on industry.[20] To encourage firms to make substantial voluntary commitments, something more than public recognition will be needed.

Still, public recognition has one major advantage: it is extremely easy for government agencies to offer. It costs the agency little and demands no changes in existing regulations. This is why agencies usually offer public recognition in conjunction with other benefits and why we are likely to see public recognition incorporated into initiatives designed to promote the use of environmental management systems. The main drawback to including public recognition in a package of incentives is that its effectiveness may become diminished with increased use. To the extent that public recognition works, it works because it offers firms a mark of distinction . If agencies offer public recognition on a routine basis, though, recognition may become something that is normal and its impact could become reduced.[21]

2. Enforcement Forbearance. Another step agencies could take to encourage the use of EMSs would be to modify their use of enforcement discretion.[22] Rather than immediately imposing fines, regulators may work with firms to correct the violations and improve their environmental management systems. They may decline to take action against violations that were disclosed through a firm's environmental management system and corrected in a timely manner. The Star Track program in EPA Region 1, for example, provides a 60-day compliance correction period for violations discovered by firms. A number of other EPA policies rely on enforcement forbearance for certain violations disclosed by firms, including the agency's audit policy, its small business compliance incentives policy, and its TSCA enforcement response policy.[23] State agencies similarly offer limited enforcement forbearance in order to encourage audits and environmental management systems.

The benefits of enforcement forbearance are limited in at least two ways. First, most such policies limit forbearance to the less serious civil violations. These policies typically do not immunize firms from criminal penalties nor prevent agencies from taking enforcement action in cases involving significant and imminent endangerment of public health. Second, forbearance policies adopted by government agencies provide no protection against citizen suits. Environmental organizations could still bring actions against firms, even if the government does not. For these reasons, the overall impact of enforcement forbearance on firms' decisions to adopt environmental management systems will probably be at best moderate.

3. <u>Regulatory Flexibility.</u> A potentially stronger incentive would be for government agencies to authorize changes to the regulations that govern a firm's operations, including changes to the permitting process. Firms which have exemplary environmental practices would be rewarded with flexibility in achieving their environmental goals. Firms could be allowed to make internal trades across media, make improvements in unregulated environmental impacts in exchange for flexibility over regulated matters, or make changes in current permitting or reporting practices. The U.S. EPA and some states are currently exploring the possibility of creating a "performance tier" (or "green tier" or "performance ladder") for those firms that consistently comply with, and exceed, environmental standards.[24] Firms in such a "performance tier" would be granted waivers from permitting and other requirements. As long as waivers do not conflict with statutes (or, in the case of state agencies, does not conflict with federal regulations), firms will not risk citizen suits because the regulations governing the firm's conduct have been changed.

The key challenge with "performance tier" programs will be to decide how much "extra" environmental performance a firm needs to deliver in order to gain different types of regulatory flexibility. The environmental community and the public will probably continue to demand a showing of superior performance before an agency decides to waive regulations. This choice of who deserves a waiver may initially be made on a case-by-case basis, though eventually agencies may find themselves contemplating a more rigorous codification of the criteria for entry into a "performance tier." Administrative and other transaction costs will pose the largest challenge for any "performance tier" program: overcoming complex and sometimes burdensome administrative procedures to decide whether firms are eligible for regulatory flexibility. As simple as it is to declare that responsible companies who consistently exceed environmental requirements ought to receive special treatment, putting this notion into policy will probably always turn out to be more complicated.

For example, recently the Oregon Environmental Quality Commission adopted regulations to create a "Green Permit" program.[25] The program provides for a four-tiered system of permits, three of which recognize firms that adopt EMSs and give them increasingly greater flexibility based on their level of environmental performance. The simple principle of rewarding better-performing firms takes shape in Oregon in 15 pages of regulations, the first page of which begins by enumerating 23 definitions. Applicants to the program need to demonstrate that they meet specific criteria outlined by the regulations. If the agency decides to accept an application, it must first proceed through notice-and-comment procedures and hold a public hearing if requested. In addition, the state may need to seek approval from the EPA, since the state agency can only grant flexibility in state-imposed requirements (and then only those that would not trigger a revision in a state implementation plan). Along the way, a "meter" is running and the applicant is obligated to reimburse the state for its costs of processing the application and conducting the approval proceedings (presumably even if the application is ultimately denied). The state agency, in turn, must provide the applicant with monthly statements of the costs it incurs. And these are only the paperwork requirements associated only with the request for regulatory relief. A company's environmental management system will itself generate paperwork requirements, as will audit inspections and the certification process.

Many years ago, Eugene Bardach predicted that "the more that on-site visits are replaced by a regime of 'self-regulation' ... the more paperwork is likely to increase and multiply."[26] While technological advances (such as continuous emissions monitoring and the internet) are certainly reducing monitoring and information costs, the costs of gaining access to a performance tier will probably deter large numbers of firms from participating. The experience to date with some of EPA's regulatory reinvention initiatives, such as Project XL, suggests that crafting individualized plans for specific facilities or firms is resource intensive.[27] To date, programs involving regulatory flexibility have been limited to a small number of firms. Only 4 firms were involved in the pilot testing of Oregon's Green Permit program; about a dozen have participated in EPA Region 1's Startrack Program; and participation in Project XL has been much lower than originally intended. Each of these programs require that participating firms first make a showing of why they should be part of the program.

Transaction costs not only can discourage firms from participating in site-specific programs for regulatory flexibility, they can also place demands on regulatory agencies. While agencies can accommodate modest levels of participation using existing resources, in the event that a significantly larger number of firms seek to participate in a "performance tier," agencies will confront substantial administrative demands in deciding which firms to admit into the tier. However, based on recent experience, it would not appear that a large number of firms will participate in performance tiers in the near future.

Although it may seem only fair that those seeking regulatory waivers bear the burden of demonstration,[28] any nontrivial requirements for entry into the performance tier will probably deter firms from participating.[29] This is not to say that regulatory waivers and performance tiers are not worthwhile; they may well be perfectly justified even if they are only used infrequently to correct for gross inefficiencies arising from the uniform application of rules. Yet government agencies should probably pause before adopting performance tier for the purpose of expanding the use of environmental management systems. It may well turn out to be the case that performance tiers mainly attract those firms which are already environmental leaders. Moreover, as long as there are significant administrative hurdles to overcome in order to enter performance tiers, such proposals will probably not on their own lead large numbers of new firms to engage in rigorous environmental management.

C. Policy Options to Require the Use of EMSs

Policy options to reduce the costs or increase the benefits of environmental management systems treat firms' decisions to use these systems as voluntary. A different approach altogether would be to mandate that firms implement environmental management systems. Mandates could be imposed either by government in the form of regulations or by large manufacturers in the private sector who make the existence of an environmental management system a contractual condition in supplier arrangements.

1. Public Requirements. Although environmental management systems are currently conceived as alternatives to conventional regulation, they could in principle be incorporated into public mandates. In other fields of regulation, such as securities, banking, and food safety, government agencies require operational procedures comparable to management and auditing systems. Yet in the environmental arena, the notion of requiring environmental management systems has gained relatively little attention. Perhaps the only context in which regulators have required the establishment of environmental management and compliance systems has been in the context of settlements of enforcement actions.

Even though a mandatory approach (with appropriate sanctions for noncompliance) has not garnered much support, it has the potential for leading many firms to use environmental management systems. However, public regulation may also lead to the possibility discussed in the first part of this paper, namely that many firms will adopt environmental management systems begrudgingly, implementing them in only a token or ritualistic manner. If the overall policy goal is to create a "cultural change" so that firms diligently and continually look for ways to improve their environmental bottom line, public regulation may not prove effective. Mandating environmental management systems might dramatically increase the number of firms using these systems without necessarily increasing the number of firms using them effectively.[30]

The specter of regulations and possible sanctions for noncompliance may also breed resistance from firms, especially from those whose managers do not see the need for such systems. Firms may perceive EMS requirements simply as one more unreasonable regulatory burden imposed by government and may react by complying only minimally with the rules.[31] In this way, requiring environmental management systems could actually undermine important motivational factors that lead firms to make environmental improvements. On the other hand, if environmental management systems tend to take on a "life of their own," such that even firms that begrudgingly undertake them soon see how beneficial they can be, then regulation might be a sensible way to get firms to overcome their initial resistance. Before government requires the use of environmental management systems, however, more research will be needed to explain their role in leading firms to make environmental improvements vis-à-vis other factors affecting environmental performance.

2. <u>Private Requirements.</u> Although not really an option for *public* policy, private mandates hold significant potential for increasing the use of environmental management systems.[32] General Motors and Ford Motor Company recently announced separate decisions to require all their parts suppliers to implement ISO certified environmental management systems by 2003. Other manufacturing firms are imposing or contemplating imposing similar requirements, creating the prospect that the use of environmental management systems will spread throughout entire supplier chains within various sectors. Facing the risk of losing their purchase agreements, suppliers will likely respond by adopting certifiable systems.

Private mandates raise some of the same issues that arise with public mandates: they do not, and probably cannot, mandate the diligence and commitment that it may take for firms to make significant environmental improvements. However, it is possible that private mandates will not generate the same kind of active resistance that public mandates could generate. Moreover, private mandates have the advantage -- at least from the standpoint of the government -- of being easy to implement.[33]

Unlike public mandates, private mandates cannot apply to all firms but will be limited to the firms in any given supply chain. They will also have limited applicability when it comes to service firms such as dry cleaners or printers. The limited scope of private mandates, however, can actually be a significant advantage for the purpose of conducting research on environmental management systems. The environmental outcomes of supply firms which implement EMSs under a private mandate can be compared with similar firms that lack EMSs because they operate in a different supply chain where no mandate exists. The fact that environmental management systems in one supply chain are mandated will eliminate the selection bias that arises from studying only volunteer firms, allowing the question of whether EMSs yield better results to be answered with greater confidence.[34] Mandated firms can also be compared with firms that voluntarily elect to implement an environmental management system, helping researchers sort out the effect of management commitment from the effect of the environmental management system itself.

D. Assessing Options to Encourage EMSs

In deciding whether to adopt policies that lower the costs or increase the benefits of environmental management systems, or whether to require such systems, policy makers will need to compare how each option fares in terms of creating incentives for firms to improve their environmental performance. In addition, each option should be compared on the basis of other criteria, including: the scope of the option (that is, how many firms would it encourage); whether the option would require new legislation; the political support (or opposition) that the option would elicit; the burdens the option would place on firms; and the administrative feasibility for the government.

In the preceding pages, I have discussed predictions about how nine different policy options would fare when evaluated against these criteria. In Table 2, I present in summary format a set of testable hypotheses about the relative impacts each policy option would have on the various criteria I have just enumerated. These predictions are qualitative and relative because most of the policies are still new, and a few are virtually untried. As government agencies experiment with these various options further, they should plan to conduct systematic empirical research to test for the effects of each along several criteria such as those I have outlined here.

If my hypotheses about the various policy options are correct, four options stand out: technical assistance; audit protection; enforcement forbearance; and private mandates. Each of these options would offer at least "moderate" incentives to firms, while also being legally and politically acceptable and at least moderately feasible. The other options either do not offer substantial incentives to firms (education and public recognition) or face significant challenges in implementation (subsidies; regulatory flexibility; and public mandates). While these are at best

Table 2: Hypothesized Impacts of Policies to Encourage Environmental Management Systems

	Degree of Incentive	Scope of Incentive	Legal Acceptability	Political Acceptability	Feasibility - Firms	Feasibility - Agencies
General Education	Low	High	High	High	High	High
Technical Assistance	Moderate	Low	High	High	Moderate	Moderate
Subsidies/ Tax Credits	High	High	Low	Low	High	Low
Audit Protection	Moderate	High	Moderate	Moderate	High	High
Public Recognition	Low	Moderate	High	Moderate	High	High

Enforcement Forbearance	Moderate	Moderate	High	Moderate	High	Moderate
Regulatory Flexibility	High	Low	Moderate	Moderate	Low	Low
Public Mandate	Moderate	High	Low	Low	Moderate	Moderate
Private Mandate	Moderate	Moderate	High	Moderate	Moderate	High

tentative conclusions offered here to facilitate future research, they nevertheless illustrate how structured analysis can permit decision makers to make comparisons between different policy options.

Two final caveats are in order. First, I have tended here to generalize across all sectors of the economy and across all types of firms in predicting the effects of each policy option. The effects of at least some of the policy options will likely vary for different types of firms. The requirements for entry into performance tiers, for example, will be less of an obstacle for large firms than for small firms. Similarly, some types of firms will probably respond more to public recognition or to offers of technical assistance than other types of firms will. Policy makers will need to be attentive to these differences.

Second, I have not attempted here to explore the impacts of *combinations* of the several policy options. Often agencies offer these options in bundles. Audit protection policies, for example, usually combine what I have treated separately as audit document protection and enforcement forbearance. Performance tier programs have tended to offer (or propose to offer) combinations of technical assistance, enforcement forbearance, regulatory flexibility, and public recognition. From the standpoint of government agencies, it is certainly understandable that they would try to offer all the available incentives to try to encourage firms to make environmental improvements. However, from the standpoint of the analyst, combinations make it difficult to discern whether individual policy options make a difference. Consider, to use a hypothetical example, a situation where government agencies only offered technical assistance in conjunction with performance tiers. If this combined policy of technical assistance and performance tiers failed to encourage many firms to adopt effective environmental management systems, we could not infer that technical assistance on its own would not work. It is conceivable that the administrative burdens associated with applying for performance tiers, *combined with* firms' reluctance to invite government employees into their plants, created sufficient costs to deter firms from participating. However, this would not mean that on its own the strategic use of technical assistance, perhaps in cooperation with a trade association, would not have yielded better, perhaps substantially better, results. Policy makers, in short, need to be mindful when they are combining different policy options.

III. How Should Policy Adapt to Environmental Management Systems?

Up to now, the policy options I have discussed have been options to encourage the wider use of environmental management systems. The premise has been that such systems will lead firms to make environmental improvements so government ought to do what it can to see that more firms implement these systems. There is another reason, however, why policymakers might wish to see more widespread use of environmental management systems: They may facilitate the use of more effective, though perhaps dramatically different, regulatory strategies.

Admittedly, asking now how public policy should adapt to the widespread adoption of environmental management systems may seem a bit premature. The use of EMSs is still far from widespread in the United States, at least judging from data on ISO certifications (though these are by no means the only environmental management systems). More importantly, the effects and efficacies of environmental management systems still need further study. Before making any radical redesign of the existing environmental system (if such a redesign is needed), we will want to know much more about the impact of these systems on businesses, communities, and the environment than we currently do. Research efforts such as those supported by the U.S. EPA and the states through the University of North Carolina and the Environmental Law Institute can help provide a basis for making more informed judgments about the future design of environmental policy.

If it turns out that the most optimistic accounts about environmental management systems are confirmed, what then for the future of environmental policy? Environmental policy could shift away from a system that relies on technological standards towards a system built around performance standards. Under the most optimistic scenario, EMSs would prove critical to the success of multimedia and performance-based regulations. If by using environmental management systems, firms generated their own verifiable data on environmental performance, regulators could more confidently replace technology-based standards with performance-based ones. By setting performance targets instead of technology standards, firms would retain flexibility in selecting the means to achieve these targets, allowing them to choose the lowest cost method of making environmental improvements. Performance targets could be set for pollutants in any media, allowing firms to "trade" between water and air emissions. Eventually, with further developments in risk analysis, firms' targets could be set in terms of the overall risk created by the firm. Firms which secure reliable third party audits of their environmental performance as part of an EMS would pave the way for a potentially dramatic shift toward a much more flexible style of regulation.

The most optimistic projections could also mean that government agencies would be able to more efficiently allocate their monitoring, permitting, and enforcement resources. With effective environmental management systems, firms would be engaging in what amounts essentially to a system of self-regulation, though still one with the threat of regulation in the background.[35] Government agencies could require new reporting requirements, under which firms and independent auditors would become the principal monitors of environmental performance. Government could rely on the information generated by these reports as a basis for assessing compliance or allocating regulatory resources. The mere presence of a verifiable management system that included internal and third party auditing would provide assurance that a firm's environmental impacts were being well-managed. Ultimately, government agencies could shift resources toward managing a system of management systems.

It is sometimes suggested that the normalized use of environmental management systems might create changes in the relationships between businesses, environmental groups, and local communities.[36] If the information generated by environmental management systems were readily accessible on the internet, community groups could closely monitor the environmental impacts of local firms. If firms routinely employed a transparent, systematic process for their environmental management, outside organizations could more feasibly provide input into that process. With transparent environmental management systems, these organizations may also be able to participate more effectively in government decisions about setting firms' performance targets. On the other hand, even with the advent of EMSs, community and environmental groups will probably still lack the resources to participate in many firms' decision processes on anything close to an equal footing with industry.

We should be careful not to idealize an alternative vision of what environmental policy would be like if only all firms used effective environmental management systems. After all, we can be certain that not all firms will use them effectively (though we can hope that most of them will). It is also quite possible that alternatives such as performance-based regulation will present certain problems of their own. Consequently, should we find ourselves in a position where environmental management systems are so widespread that policy innovations such as those I have just sketched seem achievable, we will need at that point to analyze our policy options. The same questions I posed in the first part of this paper will become relevant: What will be the impact of the policies? What will be their value taking into consideration benefits and costs? And, lastly, how will this impact and value compare with alternative policies?

One such alternative will always be to maintain the status quo. It is, after all, entirely possible for the widespread use of environmental management systems to co-exist with the current system of environmental regulation. Another alternative to a major transformation of the current regulatory system will be to refine the current system based on information gained through the use of environmental management systems. When firms using EMSs find innovative ways to manage their environmental impacts, these technological and process innovations could subsequently be incorporated into conventional environmental regulations. Environmental management systems, in other words, need not necessarily lead to new styles of regulation, but simply to new regulations better tailored to the conditions of specific firms.

Notes

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[1] According to a National Research Council committee report, international standards for environmental management systems offer "the potential to change the culture of companies worldwide on environmental protection and commitment; harmonize environmental management frameworks, labels, and methods worldwide; move companies beyond compliance; and promote voluntary improvements." National Research Council Committee on Industrial Competitiveness and Environmental Protection, *Fostering Industry-Initiated Environmental Protection Efforts* 43 (1997).

[2] *See* Forest L. Reinhardt, "Bringing the Environment Down to Earth," 77 *Harvard Business Review* 149-157 (July/Aug 1999) (identifying five circumstances under which firms can find that environmental improvements benefit shareholders).

[3] *See* Richard Florida, "Lean and Green: The Move to Environmentally Conscious Manufacturing," 39 *California Management Review* 80-105 (1996) (finding firms which were generally more innovative tended also to be more innovative in implementing environmentally conscious manufacturing).

[4] The initial cause leading to a organization's commitment to undertake an EMS or seek certification of its EMS need not be the same as the cause of *continuing* environmental improvement within the firm. Something other than the EMS itself causes an organization to adopt an EMS, but it is plausible that other factors help sustain this initial commitment. The initial commitment by an organization's highest managers to pursue certification under ISO 14001, for example, may become entrenched with the establishment of the EMS, helping to carry forward the initial commitment even at later moments when management might have otherwise not pursued environmental improvement. *See* Shelley Metzenbaum, *Making Measurement Matter: The Challenge of Building a Performance-Focused Environmental Protection System* 69-70 (Brookings 1998) ("[F]or a performance management system to work, a whole host of people and organizations have to be motivated to use performance measures, and to use them in a way that motivates improved performance.")

[5] There is a high likelihood that firms which adopt EMSs will also be firms which also possess a high level of commitment to making environmental improvements (Cell I). This presents a major challenge for research on the impact of environmental management systems, since most firms volunteer to implement EMSs and none are assigned randomly to implement them. Those firms which volunteer are probably more likely to be firms that would have improved their environmental performance anyway, which will inherently limit what can be learned from studies of firms which volunteer to implement EMSs. *Cf*. Everett Rogers, *Diffusion of Innovations* (4th ed. 1995) (the characteristics of innovators and early adopters of innovations set them apart from later adopters).

[6] *See* Jennifer Howard, Jennifer Nash, & John Ehrenfeld, "Standard or Smokescreen? Implementation of a Non-Regulatory Environmental Code" (manuscript 1999); Neil Gunningham & Peter Grabosky, *Smart Regulation: Designing Environmental Policy* 190 (1998). Interestingly, the definition of "continual improvement" under ISO 14001 does not necessarily dictate an improvement in the "environmental impact" of the organization (i.e., the "change to the environment...wholly or partially resulting from an organization's activities, products or services") but rather in "environmental performance," the latter which is defined as "measurable results of the environmental management system, related to an organization's control of its environmental aspects, based on its environmental policy, objectives and targets." *Environmental Management Systems*, ISO 14001, Part 3 (1996). The kind of "measurable results" which are to be improved could certainly be results in terms of environmental impacts, but they presumably could also be results in terms of cost savings or other results for the organization itself instead of for society or the environment.

[7] As noted earlier, evidence of progress among firms which have volunteered to implement environmental management systems does not necessarily mean that EMSs will be strong predictors of progress among a wider range of firms, for the firms which volunteer to adopt an EMS are less likely to be the kind of firms which would implement these systems in token ways.

[8] *Cf.* Everett Rogers, *supra* note 5, at 221 (noting that "[i]f individuals adopt an innovation partly in order to obtain an incentive, there is relatively less motivation to continue using the innovation").

[9] *See* Robert A. Kagan, "American Adversarial Legalism and Intra-Corporate Regulatory Systems," paper presented at the Law & Society Association meeting (1998) (arguing that "while deterrence models may be adept at inducing literal compliance, or *accountability* according to law, they may tend to undercut the continuing exercise of *responsibility* and improvements in performance that the best self-regulatory systems generate") (emphasis in original).

[10] John R. Ehrenfeld, "Cultural Structure and the Challenge of Sustainability," in Ken Sexton et al., eds., *Better Environmental Decisions: Strategies for Governments, Businesses, and Communities* 223 (Island Press 1999).

[11] Information costs are particularly noteworthy in this setting because the benefits that a firm receives from its environmental management system are ordinarily known only to those within the firm. If the results of an innovation like an EMS are hard for those outside an innovative firm to see, others will be less likely to adopt the innovation. Everett Rogers, *supra* note 5, at 16.

[12] This fear of discovery may be justified. In Massachusetts, initial compliance audits of 18 firms participating in a demonstration project involving technical assistance found that only 33 percent of the firms had fully complied with all regulations. Two firms were dropped from the project because serious legal violations were found. Massachusetts Department of Environmental Protection, *Evaluation of the Environmental Results Program Demonstration Project* (November 13, 1997).

[13] I recognize that subsidies and tax credits could just as easily be considered a method of providing firms with new benefits rather than lowering the costs of adopting environmental management systems. I include them in the section on lowering costs only because I find it implausible that the option would gain any support if it is framed in terms of "rewarding" firms with tax credits or subsidies. Such an option only stands a chance of being implemented, it seems to me, if it is framed as a means of offsetting or reducing some of the initial start-up costs associated with environmental management systems.

[14] For a discussion of the Minnesota audit subsidy, see National Academy of Public Administration, *Resolving the Paradox of Environmental Protection: An Agenda for Congress, EPA, and the States* 133-34 (1997).

[15] As of mid-1994, the Coalition for Improved Environmental Auditing reported that about 15 states either had adopted or were considering adopting legislation to protect internal audit documents. John L. Wittenborn & Stehpanie Siegel, "Comparison of State Environmental Self-Audit Privilege Legislation" (manuscript 1994). For further discussion of self-audit privilege policies, see Michael Ray Harris, "Promoting Corporate Self Compliance: An Examination of the Debate Over Legal Protection for Environmental Audits," 23 *Ecology Law Quarterly* 663 (1996); Peter A. Gish, "The Self-Critical Analysis Privilege and Environmental Audit Reports," 25 *Environmental Law* 73 (1995); Eric W. Orts & Paula C. Murray, "Environmental Disclosure and Evidentiary Privilege," 1997 *University of Illinois Law Review* 1 (1997).

[16] *Oregon Revised Statutes*, Title 36, § 468.963 (1997).

[17] US Environmental Protection Agency, *Voluntary Environmental Self-Policing and Self-Disclosure Interim Policy Statement*, 60 Fed. Reg. 16,875 (April 3, 1995); US Environmental Protection Agency, *Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations*, 60 Fed. Reg. 66,705 (December 22, 1995); US Environmental Protection Agency, *Evaluation of and Proposed Revisions to Audit Policy*, 64 Fed. Reg. 26,745 (May 17, 1999).

[18] US Environmental Protection Agency, *Evaluation of and Proposed Revisions to Audit Policy*, 64 Fed. Reg. 26,745 (May 17, 1999) (citing 1995 Price Waterhouse survey and 1998 report by the National Conference of State Legislatures).

[19] Id. at 26,751.

[20] Terry Davies and Jan Mazurek, "Industry Incentives for Environmental Improvement: Evaluation of U.S. Federal Initiatives" (GEMI 1996).

[21] It is conceivable that, in certain circumstances, public recognition for environmental performance could become a norm of doing business. Much like the Underwriters Laboratories, Inc. label arguably has become the norm for consumer product safety, "normal" public recognition could generate pressures for conformity with the requirements needed to secure the recognition.

[22] Deciding which cases to prosecute has long been a matter committed to agency discretion, so agencies generally do not need legislative authorization or to follow any special procedures in order to shift enforcement priorities. See *Heckler v. Chaney*, 470 U.S. 458 (1983). If federal agencies reallocate their enforcement authority in such a way as to require firms to go beyond compliance with existing law in order to gain some enforcement forbearance, however, they may be required to develop such policies using notice-and-comment rulemaking procedures. *Chamber of Commerce v. U.S. Department of Labor*, 174 F.3d 206 (D.C. Cir. 1999).

[23] For a discussion of various EPA policies of enforcement forbearance, see Barry Hartman & Linda Raclin, "A Primer on Environmental Auditing," National Legal Center for the Public Interest White Paper (July 1994).

[24] U.S. EPA's Project XL is perhaps the most prominent program that provides regulatory flexibility in exchange for a demonstration of superior environmental performance. The EPA has also proposed establishing a performance ladder program called the Environmental Leadership Program, and it has piloted this approach in Region 1 with the Startrack Program.

[25] Requirements for Green Permits, Oregon Administrative Rule 340-014-0100 to -0165 (August 13, 1999).

[26] Eugene Bardach, "Self-Regulation and Regulatory Paperwork," in Eugene Bardach & Robert A. Kagan, *Social Regulation: Strategies for Reform* 315, 316 (1982).

[27] Allen Blackman and Janice Mazurek, "The Cost of Developing Site-Specific Environmental Regulations: Evidence from EPA's Project XL," RFF Discussion Paper (April 1999).

[28] See, e.g., E. Donald Elliott, "Toward Ecological Law and Policy," in Marian R. Chertow & Daniel C. Esty, eds., *Thinking Ecologically: The Next Generation of Environmental Policy* 184 (1997) ("Let those who benefit from more flexible compliance have the burden of clearly measuring and documenting that the alternative system delivers better results than the traditional mechanisms it has replaced, using government-approved validation mechanisms.").

[29] Terry Davies and Jan Mazurek, "Industry Incentives for Environmental Improvement: Evaluation of U.S. Federal Initiatives" (GEMI 1996).

[30] A sharp increase in the number of firms seeking to implement environmental management systems could potentially overwhelm the current capacity for qualified third-party verification, thereby reducing the effectiveness of one of the critical methods for ensuring EMS credibility and effectiveness.

[31] *Cf.* Eugene Bardach & Robert A. Kagan, *Going by the Book: The Problem of Regulatory Unreasonableness* 104-109 (1982) (discussing the general problem of minimal compliance with regulation).

[32] Government policy could, of course, seek to encourage leading manufacturers to adopt private mandates. *See* Everett Rogers, *supra* note 5 at 219 (discussing incentives for diffusers of innovations).

[33] As with public mandates, a sudden increase in firms seeking to certify their environmental management systems could place a significant strain on the capacity of the current system of certification or auditing. *See supra* note 30.

[34] *See supra* note 5.

[35] *See* Ian Ayres & John Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate (1992)*; Eric W. Orts, "Reflexive Environmental Law," 89 *Northwestern University Law Review* 1227 (1995).

[36] *See, e.g.*, Enterprise for the Environment, *The Environmental Protection System in Transition: Toward a More Desirable Future* 58-59 (1998) (urging an extensive role for outside organizations in corporate decisionmaking that affects the environment).